

## IE 5545 A Network Game of Compliments

In a game of compliments a player has an increasing incentive to choose an action as more neighbors choose the action. Suppose that there are only two actions for each player, 0 or 1. A player  $i$  will choose action 1 if the number of neighbors taking action 1 meets or exceeds some threshold  $t_i$ . The utility of player  $i$  obeys

$$u_i(1, S_{N_i}) \geq u_i(0, S_{N_i}) \quad \text{if and only if} \quad \sum_{j \in N_i} a_j \geq t_i$$

where  $N_i$  are the neighbors of player  $i$ ,  $S_{N_i}$  are the strategies of the neighbors of player  $i$ ,  $a_j$  is the action taken by player  $j$ , and  $t_i$  is the threshold for player  $i$ . Find a pure strategy Nash equilibrium for the game of compliments shown below that is different from either of the two equilibriums given in class for this game. The threshold is 2.

